



EBULEN CONSULT

SOLAR PV ROOF-MOUNT RACKING FRAME ENGINEERING CERTIFICATE

ANTAI TILT LEG SYSTEM WITH 499 RAIL & KL406 CLAMPS

Prepared for:

Antai Technology Co., Ltd.

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1801 Huandao East Rd,
Siming District
Xiamen, China

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Ref: E22110958-Rev.1

OVERVIEW

This structural engineering certificate is issued for Antai Solar Roof Tilt Leg racking system with 499 rail and non-penetrative roof clamp fixing, which has been assessed against relevant Australian Standards and regulations. The assessment is carried out based on sound engineering methodologies. Assessment specifications and findings are given in the following sections.

AUSTRALIAN STANDARDS

- AS/NZS 1170.0:2002 – Structural design actions, Part 0: General principles
- AS/NZS 1170.1:2002 (R2016) – Structural design actions, Part 1: Permanent, imposed and other actions
- AS/NZS 1170.2:2021 – Structural design actions, Part 2: Wind actions
- AS/NZS 1664:1997 – Aluminum Structures
- AS 4312:2019 - Atmospheric corrosivity zones in Australia and detailed calculation referred to:
 - (1) ISO9224:2012 - Corrosion of metals and alloys Corrosivity of atmospheres - Guiding values for the corrosivity categories
 - (2) ISO9223:2012 - Corrosion of metals and alloys - Corrosivity of atmospheres - Classification, determination and estimation

ASSESSED PV RACKING FRAME PARTS

The following products by Antai Technology Co., Ltd. are assessed against relevant Australian Standards and building regulations based on the specified conditions.

Part Category	Included Parts	Part Material
Rail	ATL-TYN-499	AL 6005-T6
Rail Splice	ATL-TYN-304/54	AL 6005-T6
Tilt Leg Kit	ATL-TYN-07	AL 6005-T6
	ATL-TYN-57	AL 6005-T6
	ATL-TYN-58	AL 6005-T6
	ATL-TYN-71	AL 6005-T6
	ATL-TYN-329	AL 6005-T6
Inter/End Panel Clamp Kit	ATL-FWNY-09	AL 6005-T6
	ATL-GN-003	AL 6005-T6
	ATL-CG-018	AL 6005-T6
Klip Lock Roof Clamp	ATL-TYN-19/20	AL 6005-T5
	ATL-TYN-465/466/467	AL 6005-T5

Note: The rail splice can only be the two separated components with the code name ATL-TYN-304/54, which are fixed both inside and outside of the rail at the connection point. Other types of rail splices are not covered by this certification.

ASSESSMENT CONDITIONS

- Solar PV system design life of 25 years
- Wind region A, B, C, D
- Terrain category 2.0, 2.5, 3.0
- Ultimate wind recurrence interval of 200 years
- Maximum average roof height of 20m
- Solar PV panel assessed: 2300mm x 1200mm, 2100mm x 1100mm, 2000mm x 1100mm, 1800mm x 1200mm, 1700mm x 1100mm
- Self-weight of solar PV panel and racking frame is 0.15kPa-0.18kPa
- Solar PV panel is supported by minimum 2 rails
- The spacing table values given in the Installation Guideline are based on the Corrosivity Category C3
- The clamps have been assessed with the Lysaght Klip Lok 406 roof sheeting
- The clamps capacities are taken from below testing reports: No.MT-15/317 and 23-0026-B by Melbourne Testing Services (MTS) Pty Ltd, dated 26/05/2015 and 20/04/2023.
- The racking rail capacity is taken as per the test report: No.XMML23090468_EN by BM Shenghe Testing Technology (Xiamen) Co., Ltd, dated 19/09/2023.
- Product details are taken from the drawing set provided by Antai Technology Co., Ltd. as listed in the above component table
- The pull-out capacity of Antai Tilt Leg kit is taken from Test Report No. XMIN22000964ML03_EN by SGS-CSTC Standards Technical Service Co., Ltd. Xiamen Branch. Dated at 16/09/2022
- Installation to be carried out strictly in accordance with the manufacturer's installation guidelines

IMPORTANT NOTES

- ***This certification is issued based on assessments of solar PV racking frame system and its fixing connection to building roof. It has not considered the structural capacity of building structure and solar PV panel due to uncertainty of generic application. The installer must use the data tables as references only.***
- ***The attached spacing tables must be read in conjunction with foot notes and general notes.***
- ***The certificate shall be read as a whole. Any section, text, image, table extracted from this certification is not valid stand-alone.***
- ***This certification shall be reviewed and revalidated by the structural engineer after two years from the date of issue or if any applicable standard is updated.***

CONCLUSION

The above-mentioned solar PV roof-mount racking frame system by Antai Technology Co., Ltd. is found structurally sound against relevant Australian Standards following the engineering recommendations in this certification. Installation shall be conducted following the manufacturer's guidelines.

Certified by:



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APPENDIX A – INSTALLATION GUIDELINE

Maximum Panel Size: 1800mm x 1200mm																	
Interface Spacing Table for Terrain Category 3 (Unit: mm)																	
Wind Region	Panel Tilt Angle Roof Zone	H<5m				5m<H<10m				10m<H<15m				15m<H<20m			
		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	
A	Internal Zone	1400	933	755		1400	933	755		1280	803	651		1134	714	580	
	Intermediate Zone	956	605	492		956	605	492		822	523	426		731	466	380	
	Edge Zone	702	448	365		702	448	365		605	387	316		540	346	282*	
	Corner Zone	458	294*	241*		458	294*	241*		396	255*	209*		354	228*	187*	
B1	Internal Zone	982	622	505		982	622	505		845	537	437		751	479	390	
	Intermediate Zone	636	407	332		636	407	332		549	352	287*		490	314	257*	
	Edge Zone	470	302*	247*		470	302*	247*		407	262*	214*		363	234*	191*	
	Corner Zone	309	199*	163*		309	199*	163*		268*	173*	142*		239*	155*	127*	
B2	Internal Zone	884	561	457		884	561	457		761	485	395		677	432	353	
	Intermediate Zone	574	368	300*		574	368	300*		496	318	260*		442	284*	232*	
	Edge Zone	425	273*	223*		425	273*	223*		368	237*	194*		328	212*	173*	
	Corner Zone	280*	181*	148*		280*	181*	148*		242*	157*	128*		217*	140*	115*	
C	Internal Zone	567	363	297*		567	363	297*		490	315	257*		437	281*	230*	
	Intermediate Zone	372	239*	196*		372	239*	196*		322	208*	170*		288*	186*	152*	
	Edge Zone	276*	178*	146*		276*	178*	146*		239*	155*	127*		214*	139*	113*	
	Corner Zone	183*	118*	97*		183*	118*	97*		158*	103*	84*		142*	92*	75*	
D	Internal Zone	364	235*	192*		364	235*	192*		315	204*	167*		282*	182*	149*	
	Intermediate Zone	240*	155*	127*		240*	155*	127*		208*	135*	110*		186*	121*	99*	
	Edge Zone	179*	116*	95*		179*	116*	95*		155*	101*	82*		139*	90*	74*	
	Corner Zone	119*	77*	63*		119*	77*	63*		103*	67*	55*		92*	60*	49*	

- NOTES:
- * denotes the situations where the wind load is more than 5KPa and the installation safety is compromised.
 - Definition of Terrain Category is given in General Note 1.
 - Notion of Roof Zone is given in General Note 2.
 - Panel tilt angle is given in reference to roof surface
 - The spacing table is based on the fixing condition specified in General Note 6.

Maximum Panel Size: 1800mm x 1200mm																	
Interface Spacing Table for Terrain Category 2.5 (Unit: mm)																	
Wind Region	Panel Tilt Angle	H<5m				5m<H<10m				10m<H<15m				15m<H<20m			
		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	
A	Roof Zone																
	Internal Zone	1340	843	683		1189	748	607		1058	668	543		969	613	499	
	Intermediate Zone	863	548	446		766	488	397		684	437	356		628	401	328	
	Edge Zone	635	406	331		564	362	295*		505	324	265*		464	298*	244*	
	Corner Zone	415	267*	218*		370	238*	195*		332	214*	175*		305	197*	161*	
B1	Internal Zone	887	563	458		787	501	408		703	448	366		645	412	336	
	Intermediate Zone	576	369	301*		512	329	269*		459	295*	241*		422	271*	222*	
	Edge Zone	426	274*	224*		380	245*	200*		340	220*	180*		313	202*	165*	
	Corner Zone	281*	181*	148*		250*	162*	132*		224*	145*	119*		207*	134*	110*	
B2	Internal Zone	799	508	414		709	452	369		634	405	331		582	373	304	
	Intermediate Zone	520	334	272*		463	297*	243*		414	267*	218*		381	245*	201*	
	Edge Zone	385	248*	203*		343	221*	181*		308	199*	163*		283*	183*	150*	
	Corner Zone	254*	164*	134*		226*	146*	120*		203*	132*	108*		187*	121*	99*	
C	Internal Zone	514	330	269*		457	294*	240*		410	264*	216*		377	243*	198*	
	Intermediate Zone	337	217*	178*		301*	194*	159*		270*	174*	143*		248*	160*	131*	
	Edge Zone	251*	162*	133*		224*	145*	119*		201*	130*	106*		185*	120*	98*	
	Corner Zone	166*	107*	88*		148*	96*	79*		133*	86*	71*		122*	79*	65*	
D	Internal Zone	331	213*	174*		295*	190*	156*		264*	171*	140*		243*	157*	129*	
	Intermediate Zone	218*	141*	116*		195*	126*	103*		175*	113*	93*		161*	104*	85*	
	Edge Zone	163*	105*	86*		145*	94*	77*		130*	85*	69*		120*	78*	64*	
	Corner Zone	108*	70*	57*		96*	62*	51*		86*	56*	46*		80*	52*	42*	

- NOTES:
- * denotes the situations where the wind load is more than 5KPa and the installation safety is compromised.
 - Definition of Terrain Category is given in General Note 1.
 - Notion of Roof Zone is given in General Note 2.
 - Panel tilt angle is given in reference to roof surface
 - The spacing table is based on the fixing condition specified in General Note 6.

Maximum Panel Size: 1800mm x 1200mm																	
Interface Spacing Table for Terrain Category 2 (Unit: mm)																	
Wind Region	Panel Tilt Angle	H<5m				5m<H<10m				10m<H≤15m				15m<H≤20m			
		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	
A	Internal Zone	1218	766	621		990	626	509		891	565	460		838	533	434	
	Intermediate Zone	784	499	406		641	410	334		578	370	302*		545	349	285*	
	Edge Zone	578	370	302*		474	304	249*		428	275*	225*		404	260*	213*	
	Corner Zone	378	244*	199*		311	201*	164*		282*	182*	149*		266*	172*	141*	
B1	Internal Zone	805	512	417		659	421	343		594	380	310		560	359	293*	
	Intermediate Zone	524	336	275*		431	277*	226*		389	251*	205*		367	236*	193*	
	Edge Zone	388	250*	205*		320	206*	169*		289*	187*	153*		273*	176*	144*	
	Corner Zone	256*	165*	135*		211*	136*	112*		191*	124*	101*		180*	117*	96*	
B2	Internal Zone	726	463	377		594	380	310		536	344	281*		505	324	265*	
	Intermediate Zone	473	304	248*		389	251*	205*		352	227*	185*		332	214*	175*	
	Edge Zone	351	226*	185*		289*	187*	153*		262*	169*	138*		247*	160*	131*	
	Corner Zone	232*	150*	123*		191*	124*	101*		173*	112*	92*		163*	106*	87*	
C	Internal Zone	468	301*	246*		384	248*	203*		348	224*	183*		328	212*	173*	
	Intermediate Zone	307	198*	162*		253*	164*	134*		229*	148*	121*		216*	140*	115*	
	Edge Zone	229*	148*	121*		189*	122*	100*		171*	111*	91*		161*	105*	86*	
	Corner Zone	151*	98*	80*		125*	81*	66*		113*	73*	60*		107*	69*	57*	
D	Internal Zone	301*	195*	159*		248*	161*	131*		225*	145*	119*		212*	137*	112*	
	Intermediate Zone	199*	129*	105*		164*	106*	87*		149*	96*	79*		140*	91*	75*	
	Edge Zone	148*	96*	79*		123*	79*	65*		111*	72*	59*		105*	68*	56*	
	Corner Zone	98*	64*	52*		81*	53*	43*		74*	48*	39*		70*	45*	37*	

NOTES:
1. * denotes the situations where the wind load is more than 5KPa and the installation safety is compromised.
2. Definition of Terrain Category is given in General Note 1.
3. Notion of Roof Zone is given in General Note 2.
4. Panel tilt angle is given in reference to roof surface
5. The spacing table is based on the fixing condition specified in General Note 6.

Maximum Panel Size: 2300mm x 1200mm													
Interface Spacing Table for Terrain Category 3 (Unit: mm)													
Wind Region	Panel Tilt Angle Roof Zone	H<5m			5m<H<10m			10m<H<15m			15m<H<20m		
		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°
A	Internal Zone	1172	730	591	1172	730	591	1002	628	509	887	559	454
	Intermediate Zone	748	473	385	748	473	385	643	409	333	572	365	297
	Edge Zone	549	350	286	549	350	286	474	303	247	422	271	221*
	Corner Zone	358	230*	188*	358	230*	188*	310	200*	163*	277	178*	146*
B1	Internal Zone	769	486	395	769	486	395	661	420	342	588	374	305
	Intermediate Zone	498	318	260	498	318	260	430	275	225*	383	246	201*
	Edge Zone	368	236*	193*	368	236*	193*	318	205*	167*	284	183*	150*
	Corner Zone	242	156*	128*	242	156*	128*	209*	135*	111*	187*	121*	99*
B2	Internal Zone	692	439	357	692	439	357	595	379	309	530	338	276
	Intermediate Zone	449	288	235*	449	288	235*	388	249	203*	346	222*	182*
	Edge Zone	332	214*	175*	332	214*	175*	288	185*	152*	257	166*	136*
	Corner Zone	219*	141*	116*	219*	141*	116*	190*	122*	100*	169*	110*	90*
C	Internal Zone	444	284	232*	444	284	232*	383	246	201*	342	220*	180*
	Intermediate Zone	291	187*	153*	291	187*	153*	252	162*	133*	225*	145*	119*
	Edge Zone	216*	140*	114*	216*	140*	114*	187*	121*	99*	167*	108*	89*
	Corner Zone	143*	92*	76*	143*	92*	76*	124*	80*	66*	111*	72*	59*
D	Internal Zone	285	184*	150*	285	184*	150*	247	159*	130*	221*	142*	117*
	Intermediate Zone	188*	121*	99*	188*	121*	99*	163*	105*	86*	146*	94*	77*
	Edge Zone	140*	91*	74*	140*	91*	74*	121*	79*	64*	109*	70*	58*
	Corner Zone	93*	60*	49*	93*	60*	49*	80*	52*	43*	72*	47*	38*

- NOTES:
1. * denotes the situations where the wind load is more than 5KPa and the installation safety is compromised.
 2. Definition of Terrain Category is given in General Note 1.
 3. Notion of Roof Zone is given in General Note 2.
 4. Panel tilt angle is given in reference to roof surface
 5. The spacing table is based on the fixing condition specified in General Note 6.

Maximum Panel Size: 2300mm x 1200mm													
Interface Spacing Table for Terrain Category 2.5 (Unit: mm)													
Wind Region	Panel Tilt Angle	H<5m			5m<H<10m			10m<H<15m			15m<H<20m		
		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°
A	Roof Zone												
	Internal Zone	1054	660	535	931	585	475	828	523	425	758	480	390
	Intermediate Zone	675	429	349	599	381	311	535	342	279	491	314	256
	Edge Zone	497	318	259	442	283	231*	395	254	207*	363	233*	191*
	Corner Zone	325	209*	171*	289	186*	152*	259	167*	137*	239	154*	126*
B1	Internal Zone	694	440	358	616	392	319	550	351	286	505	322	263
	Intermediate Zone	451	289	236*	401	257	210*	359	231*	188*	330	212*	173*
	Edge Zone	334	215*	175*	297	191*	156*	266	172*	140*	245	158*	129*
	Corner Zone	219*	142*	116*	196*	126*	104*	176*	114*	93*	162*	105*	86*
B2	Internal Zone	625	398	324	555	354	288	496	317	259	455	291	238
	Intermediate Zone	407	261	213*	362	233*	190*	324	209*	171*	298	192*	157*
	Edge Zone	301	194*	159*	269	173*	142*	241	155*	127*	222*	143*	117*
	Corner Zone	199*	128*	105*	177*	114*	94*	159*	103*	84*	146*	95*	78*
C	Internal Zone	402	258	211*	358	230*	188*	320	206*	169*	295	190*	155*
	Intermediate Zone	264	170*	139*	235*	152*	124*	211*	136*	111*	194*	125*	103*
	Edge Zone	196*	127*	104*	175*	113*	93*	157*	102*	83*	145*	94*	77*
	Corner Zone	130*	84*	69*	116*	75*	61*	104*	67*	55*	96*	62*	51*
D	Internal Zone	259	167*	136*	231*	149*	122*	207*	134*	109*	190*	123*	101*
	Intermediate Zone	171*	110*	90*	152*	98*	81*	137*	88*	72*	126*	81*	67*
	Edge Zone	127*	82*	67*	114*	74*	60*	102*	66*	54*	94*	61*	50*
	Corner Zone	84*	55*	45*	75*	49*	40*	68*	44*	36*	62*	40*	33*

- NOTES:
1. * denotes the situations where the wind load is more than 5KPa and the installation safety is compromised.
 2. Definition of Terrain Category is given in General Note 1.
 3. Notion of Roof Zone is given in General Note 2.
 4. Panel tilt angle is given in reference to roof surface
 5. The spacing table is based on the fixing condition specified in General Note 6.

Maximum Panel Size: 2300mm x 1200mm																	
Interface Spacing Table for Terrain Category 2 (Unit: mm)																	
Wind Region	Panel Tilt Angle	H<5m				5m<H<10m				10m<H≤15m				15m<H≤20m			
		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°		Φ < 15°	15° ≤ Φ < 25°	25° ≤ Φ ≤ 45°	
A	Internal Zone	953	599	486		775	490	399		697	442	360		656	417	339	
	Intermediate Zone	613	390	318		502	321	262		453	290	237*		427	273	223*	
	Edge Zone	452	289	236*		371	238	195*		335	215*	176*		316	203*	166*	
	Corner Zone	296	191*	156*		244	157*	129*		220*	142*	116*		208*	134*	110*	
B1	Internal Zone	630	401	326		515	329	269		465	298	243		438	281	229*	
	Intermediate Zone	410	263	215*		337	217*	177*		304	196*	160*		287	185*	151*	
	Edge Zone	304	196*	160*		250	161*	132*		226*	146*	119*		213*	138*	113*	
	Corner Zone	200*	129*	106*		165*	107*	87*		149*	97*	79*		141*	91*	75*	
B2	Internal Zone	568	362	295		465	298	243		420	269	220*		395	254	207*	
	Intermediate Zone	370	238	194*		304	196*	160*		275	177*	145*		260	167*	137*	
	Edge Zone	275	177*	145*		226*	146*	119*		205*	132*	108*		193*	125*	102*	
	Corner Zone	181*	117*	96*		149*	97*	79*		135*	88*	72*		128*	83*	68*	
C	Internal Zone	366	235*	192*		301	194*	158*		272	175*	143*		257	165*	135*	
	Intermediate Zone	240	155*	127*		198*	128*	105*		179*	116*	95*		169*	109*	90*	
	Edge Zone	179*	116*	95*		148*	96*	78*		134*	87*	71*		126*	82*	67*	
	Corner Zone	118*	77*	63*		98*	63*	52*		88*	57*	47*		84*	54*	44*	
D	Internal Zone	236*	152*	125*		194*	126*	103*		176*	114*	93*		166*	107*	88*	
	Intermediate Zone	156*	101*	82*		128*	83*	68*		116*	75*	62*		110*	71*	58*	
	Edge Zone	116*	75*	62*		96*	62*	51*		87*	56*	46*		82*	53*	43*	
	Corner Zone	77*	50*	41*		63*	41*	34*		57*	37*	30*		54*	35*	29*	

NOTES:
1. * denotes the situations where the wind load is more than 5KPa and the installation safety is compromised.
2. Definition of Terrain Category is given in General Note 1.
3. Notion of Roof Zone is given in General Note 2.
4. Panel tilt angle is given in reference to roof surface
5. The spacing table is based on the fixing condition specified in General Note 6.

General Notes

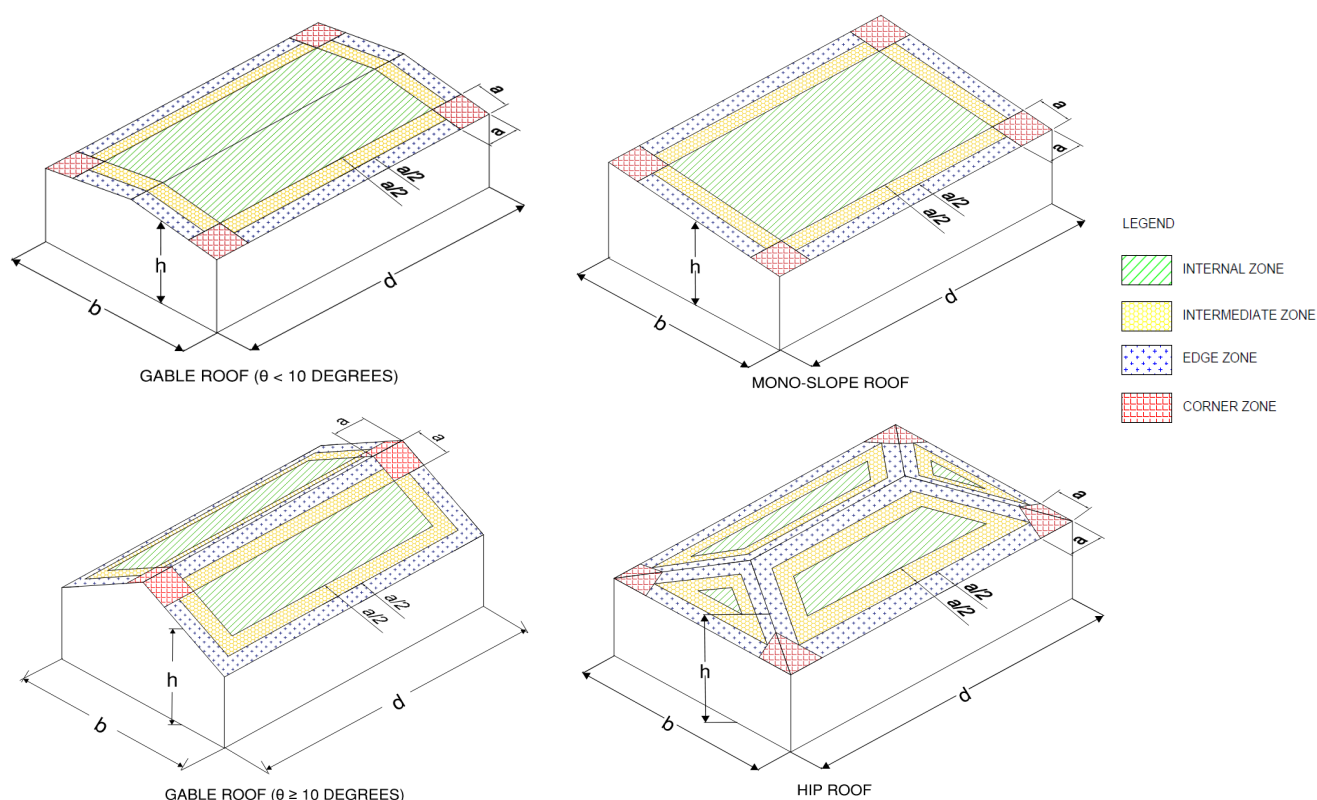
Note 1 Terrain Category 3 (TC 3) denotes terrain with numerous closely spaced obstructions having heights generally from 3m to 10m. The minimum density of obstructions shall be at least the equivalent of 10 house-size obstructions per hectare.

Terrain Category 2.5 (TC 2.5) denotes terrain with some trees or isolated obstructions, terrain in developing outer urban areas with scattered houses, or large acreage developments with more than two and less than 10 buildings per hectare.

Terrain Category 2 (TC 2) denotes open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5m to 5m, with no more than two obstructions per hectare.

Refer to AS/NZS 1170.2:2021 - 4.2.1 for Terrain Category definitions.

Note 2 Notion of Roof Zone examples are shown in the following figures.



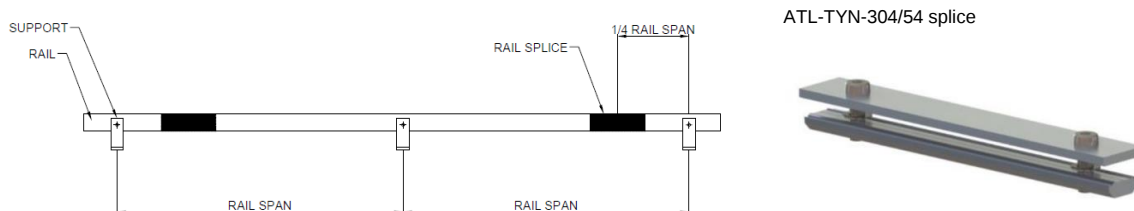
Refer to AS/NZS 1170.2:2021 – Chapter 5.4.4 for more accurate Roof Zone notion and cases.

To determine the zone dimension "a", follow the steps:

- 1) Determine building height (h), building length (b) and building width (d).
- 2) Determine (h/d) and (h/b)
- 3) If (h/b) or (h/d) ≥ 0.2 , a is the minimum of 0.2b or 0.2d
- 4) If (h/b) and (h/d) < 0.2 , a is equal to 2h

Note: "h" represents the average roof height. Average roof height = (pitch height - gutter height)/2

Note 3 To ensure the fixing spacing in above tables are valid, rail splice connectors must not be installed at the support point or at the middle span point between two adjacent supports. It is recommended to install the connector at 1/4 span points from the supports. The rail splice can only be the two separated components with the code name ATL-TYN-304/54, which are fixed both inside and outside of the rail at the connection point as shown below. Other types of rail splices are not covered by this certification.



Note 4 Number of panel clamps required per panel for installation when the tilting angle is **less than 15 degrees**:

		TC3			TC2.5			TC2		
		H≤10m	10m<H≤15m	15m<H≤20m	H≤10m	10m<H≤15m	15m<H≤20m	H≤10m	10m<H≤15m	15m<H≤20m
Region A	Internal	4	4	4	4	4	4	4	4	4
	Intermediate	4	4	4	4	4	4	4	4	4
	Edge	4	4	4	4	6	6	6	6	6
	Corner	6	6	6	6	8	8	8	8	8
Region B1&B2	Internal	4	4	4	4	4	4	4	4	4
	Intermediate	4	4	6	6	6	6	6	6	6
	Edge	6	6	6	8	8	8	8	8	8
Region C	Corner	8	8	10	10	NA	NA	10	NA	NA
	Internal	4	6	6	6	6	6	6	8	8
	Intermediate	6	8	8	8	8	10	10	10	10
	Edge	8	10	10	10	NA	NA	NA	NA	NA
Region D	Corner	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Internal	6	8	8	8	8	8	10	10	10
	Intermediate	10	NA	NA	NA	NA	NA	NA	NA	NA
	Edge	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Corner	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1. NA denotes the situations where an excessive amount of panel clamps are required and the installation is no longer practical.
2. A site-specific engineering assessment must be carried out to determine the number of panel clamps required for situations not covered in this table.

Number of panel clamps required per panel for installation with tilting angle **up to 45 degrees**:

		TC3			TC2.5			TC2		
		H≤10m	10m<H≤15m	15m<H≤20m	H≤10m	10m<H≤15m	15m<H≤20m	H≤10m	10m<H≤15m	15m<H≤20m
Region A	Internal	4	4	4	4	4	6	6	6	6
	Intermediate	6	6	6	6	6	8	8	8	8
	Edge	6	8	8	8	8	10	10	10	10
	Corner	10	NA	NA	NA	NA	NA	NA	NA	NA
Region B1&B2	Internal	6	6	6	6	8	8	8	8	10
	Intermediate	8	10	10	10	10	NA	NA	NA	NA
	Edge	10	NA	NA	NA	NA	NA	NA	NA	NA
Region C	Corner	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Internal	8	10	10	10	10	NA	NA	NA	NA
	Intermediate	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Edge	NA	NA	NA	NA	NA	NA	NA	NA	NA
Region D	Corner	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Internal	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Intermediate	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Edge	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Corner	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1. NA denotes the situations where an excessive amount of panel clamps are required and the installation is no longer practical.
2. A site-specific engineering assessment must be carried out to determine the number of panel clamps required for situations not covered in this table.

Note 5 The provided installation spacing tables are based on maximum PV panel size of 2300mm x 1200mm with 2 rails per panel array. For other panel sizes and more rails, refer the below table for adjustment factors based on the given spacing tables for 2300mmx1200mm.

Maximum Panel Size	Number of Rails	Spacing Adjustment Factor
2300x1200	3 rails	120%
2300x1200	4 rails	160%
2100x1100	2 rails	109%
2100x1100	3 rails	131%
2100x1100	4 rails	175%
2000x1100	2 rails	115%
2000x1100	3 rails	138%
2000x1100	4 rails	176%
1700x1100	2 rails	125%
1700x1100	3 rails	162%
1700x1100	4 rails	214%

Note: The maximum allowable fixing spacing shall not exceed 1400mm after applying the adjustment factors.

Note 6 The clamps capacities are taken from testing report No.MT-15/317 and 23-0026-B by Melbourne Testing Services Pty Ltd, dated 26/05/2015 and 20/04/2023. This test was carried out using Lysaght KlipLok 406 Non-penetrative roof sheeting clamps. Other roof sheeting products are not covered in this assessment.

The clamps must be mounted over purlins and on full roof sheeting ribs. No clamp is allowed to be installed on lapped roof sheeting ribs.

Note 7

	Adjustment factor based on Corrosivity Category C3
Corrosivity Category C4	95%
Corrosivity Category C5	80%

Note 8 All above-mentioned adjustment factors from different notes shall not be applied together to determine the final installation spacing. Factors from each note shall be applied independently. For multiple installation conditions change, please seek for the engineer's advice.